



## USER SUPPORT APPARATUS AND SYSTEM USING AGENTS

### BACKGROUND OF THE INVENTION

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#### 1. Field of the Invention

**[0001]** The present invention relates to a user support technique, particularly  
5 a user support system that assists with user processes such as operations and  
information retrievals using agents.

#### 2. Description of the Related Art

**[0002]** Since Internet access from the home has become common recently,  
the number of World Wide Web (WWW) users has grown rapidly. It is very  
10 likely that information these users want and need exists somewhere within the  
vast number of web sites. Since it is convenient for home users to access huge  
amounts of information from all over the world, the number of home users will  
increase further.

**[0003]** The WWW is also playing a larger role as an advertising medium as  
15 the Web user population grows. Many advertisers place their advertisements  
on popular Web sites, as well as on their own. Advertisers can insert hyperlinks  
into their advertisements displayed on other sites and easily redirect users to  
their own Web sites. Conventional media, including television, radio, and  
newspapers, do not have such a feature.

**[0004]** However, the number of both information providers and readers is growing explosively and the unexpected growth is becoming a hindrance to the effective use of available information. From the users' viewpoint, it is very difficult to find the information they desire among the large amount of

5 information available. Since many of the people accessing the Internet today are beginners or lack computer skills, it is necessary to develop a technology by which such novices can easily search for information.

**[0005]** On the other hand, from the information providers' perspective, advertising on the Web has not been conducted effectively. Since the

10 communications infrastructure is not likely to catch up with the explosive growth of the user population, image-based advertisements like banner ads will place a heavy load on networks and slow down users who are browsing the Web.

Moreover, users are not likely to click the banner advertisements to view their details. Therefore, a more effective advertising technology is needed to appeal

15 to users.

## SUMMARY OF THE INVENTION

**[0006]** The present invention has been made with a view to the above-mentioned problems, and an objective thereof is to provide a user support technology that will allow a user to access information or efficiently execute

20 processes in a friendly environment using a computer or other device. Another objective is to provide an efficient advertising technology.

**[0007]** According to one aspect of the present invention, a user support apparatus is provided. The apparatus comprises the command identification block, which has an electronic collection of anticipated user commands and identifies the contents of a user command; the response block, which contains  
5 an electronic collection of action patterns for an agent to use when responding to user commands and enables the agent to respond to those commands; the search unit which searches for information requested by the user among the information offered by multiple information providers; and the process unit which executes the process that prioritizes the information providers. The command  
10 identification block further includes an additional collection of anticipated commands that trigger the prioritizing process, and the process unit initiates the prioritizing process when the user's command is included in the additional command collection.

**[0008]** Agent is used here as the generic name of a function supporting a  
15 user's search for information or navigation to the desired information. The function primarily enables a personified character to appear on screen and converse with the user. The agent is not always a visible character though. It may also be a user support program that is invisible to the user or another function such as a back-end process in the system. The agent's action patterns  
20 include agent responses, images, behaviors, and any other processes related to user support. The user commands and agent responses are not only made verbally, but may also be given in text. A command may consist of spoken

words or sentences that can be converted into text data by a speech recognition process.

**[0009]** An information provider may become a sponsor by requesting that the user support apparatus administrator provide its advertisement to the users and  
5 paying the advertising fee. The advertisement may then be displayed during a conversation between the agent and the user. Multiple sponsors may be registered with one agent, allowing the agent to present their advertisements to the users.

**[0010]** The additional command collection may be incorporated into the user  
10 command collection to form one comprehensive collection. Thereby, when a user command is identified, both the user command collection and the additional command collection can be referenced.

**[0011]** The process unit may arrange information related to a specific information provider at the top of a list of search results obtained by the search  
15 unit. Thereby, even if multiple sources for the user's desired information are identified, the sponsor's source will stand out and the user will be able to easily recognize the sponsor's information.

**[0012]** The process unit may emphasize information related to a specific information provider when it presents the user with the search results obtained  
20 by the information search unit. For instance, the sponsor's information may be highlighted with a different color or displayed in a different size, font type, or font

style for ease of recognition. The sponsor's information may also be bordered with a frame or designated by a mark such as "recommendation".

**[0013]** The user support apparatus may further comprise a setting unit which enables the user to register a specific information provider as high priority, and  
5 wherein the process unit executes the prioritizing process with regard to the specifically registered information providers. Since each user selects his/her favorite sponsors, advertisements can be provided to appropriate target users.

**[0014]** According to another aspect of the present invention, a user support system is provided. The user support system comprises multiple user support  
10 apparatuses connected to a network as independent network nodes, with each of the apparatuses corresponding to a specialized field. The user command collection, the agent action collection, and the additional command collection of each user support apparatus is generated according to its specialized field. In this configuration, a client-server system is created in which the user's terminal  
15 is a client and each of the user support apparatuses is a server. The multiple user support apparatuses may each provide a separate category of service, such as news, fortune telling, travel, cooking, business, health, and more. In this case, since each user support apparatus has a specific theme, the agent on each user support apparatus can be easily maintained and refined.  
20 Additionally, since the commands regarding different topics are processed on different network nodes, the system load can be distributed and balanced among the nodes.

**[0015]** In this system, the multiple user support apparatuses may contain their own response blocks and share the command identification block at any one of the network nodes. In this configuration, the shared command identification block may include the user command collections for all

5 apparatuses. The user support apparatus that hosts the command identification block may function as the entrance server or portal server capable of identifying all user commands to be processed by the user support system. The user support apparatus that should respond to the user command may be selected according to the contents of the command identified by the entrance server.

10 Thereby, the user command identification and agent response processes can be performed at different nodes, balancing or optimizing the system load.

**[0016]** In this system, the command identification block may include a command search unit that searches for the user's command in the user command collection and a reporting unit that notifies the system administrator

15 when the user command is not found in the user command collection. Thereby, the administrator can revise the user command collection and the agent action collection.

**[0017]** The command identification block may further include an index file that stores an index of the contents of the user command collection. The search

20 unit can initially perform an index-search for the user command to narrow the search scope and improve the search speed.

**[0018]** The system may further include a library providing unit, which offers the user command library to third parties off-line and/or on-line. For instance, the user command collection can be provided off-line as a software package, or on-line by offering access rights to servers that store the user command collection. Similarly, a general command library that records users' natural commands as a natural language library may also be provided to third parties. Thereby, third parties can independently develop a user command collection, an additional command collection, and an agent action collection, and can thus create a new user support apparatus. As a result, the user support system as a whole can be enhanced.

**[0019]** Moreover, any arbitrary combination of the above-mentioned structural components in the present invention is still effective as an embodiment when applied as a method, a system, a server, a terminal, a computer program, or any other means of practice. User utterance may be expressed as "command," whereas agent utterance may be expressed as "response" throughout the specification.

**[0020]** This summary of the invention does not describe all necessary features, so the invention may also be a sub-combination of the features described.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0021]** Fig. 1 is the overall structure of the network system, including the user support system, according to one embodiment of the invention.

**[0022]** Fig. 2 is the internal structure of the originating server in the user  
5 support system.

**[0023]** Fig. 3 is the internal structure of the index file in the originating server.

**[0024]** Fig. 4 is the internal structure of the user command collection in the originating server.

**[0025]** Fig. 5 is the internal structure of the access information file in the  
10 originating server.

**[0026]** Fig. 6 is the internal structure of the sponsor information file in the originating server.

**[0027]** Fig. 7 is the internal structure of the additional index file in the originating server.

**[0028]** Fig. 8 is the internal structure of the additional command collection in  
15 the originating server.



**[0029]** Fig. 9 is the internal structure of the gourmet server in the user support system.

**[0030]** Fig. 10 is the internal structure of the page containing the sponsor processing unit.

5 **[0031]** Fig. 11 is the internal structure of a user terminal that utilizes the user support system.

**[0032]** Fig. 12 shows the local agent displayed on screen when a user has activated the user terminal.

**[0033]** Fig. 13 shows the chat agent displayed on screen when the user  
10 enters a command.

**[0034]** Fig. 14 shows the gourmet agent displayed on screen when the user asks for specific information.

**[0035]** Fig. 15 shows how the gourmet agent presents search results to the user.

15 **[0036]** Fig. 16 shows how the gourmet agent notifies the user when the sponsor's site has been updated.

## DETAILED DESCRIPTION OF THE INVENTION

**[0037]** The invention will now be described on the basis of the preferred embodiments, which are not intended to limit the scope of the present invention, but serve to exemplify it. All of the features and combinations thereof described  
5 in the embodiment are not necessarily essential to the invention.

**[0038]** Fig. 1 shows the overall structure of the network system 10, including the user support system 16, according to one embodiment of the present invention. Here the user terminal 12 and the user support system 16 are connected to each other via the Internet 14. The user terminal 12 is a personal  
10 computer, a Personal Digital Assistant (PDA), a mobile phone with access to the Internet 14, or any other suitable hardware device.

**[0039]** The user support system 16 includes the originating server 20, the chat server 24, and the gourmet server 26, which are all connected to the Internet 14. The originating server 20 includes an electronic collection of  
15 anticipated user commands and a command identification block that identifies the contents of a user command. The command identification block is shared by other servers in the user support system, namely the chat server 24 and the gourmet server 26. The chat server 24 and the gourmet server 26 each include an electronic collection of agent action patterns and have a response block  
20 within their server node that enables their agent to respond to user commands.

**[0040]** The originating server 20, the chat server 24, and the gourmet server 26 are configured as separate network nodes, allowing the processing of user commands and agent responses to be distributed among the servers. Since the agent responsible for one field can be implemented in a different node than the agent responsible for another, maintenance can easily be conducted for each of the agents. The names "chat server" and "gourmet server" are assigned according to the charged or specialized field of the agent. Servers such as the chat server 24 and the gourmet server 26 are generally referred to as specialized servers throughout, and the agents hosted on these servers are referred to as expert agents. Although the user support system 16 may be configured as a single unit or apparatus, for instance as one component inside of the portal site, it is assumed in the following that the system is configured using separate nodes with the originating server 20 acting as the portal server for the user terminal 12.

**[0041]** The user command is sent to the originating server 20 and its content is identified in the user command collection. Then the agent designated to respond to the command is identified according to the content and the response process is executed by the response block. An agent on the chat server 24, also referred to as the "chat agent", responds to general greetings such as "Hello", and an agent on the gourmet server 26, also referred to as the "gourmet agent", responds to commands related to cooking or dining, such as "Tell me a restaurant serving good Peking ravioli." Each expert agent determines what kind of information the user wants during a conversation with the user, and

supports the user in searching for the desired information among the large amount of information available.

**[0042]** In the user support system described in this embodiment, an information provider, simply referred to as a sponsor, who establishes a sponsorship contract with the expert agent is granted higher priority. For instance, assume that a car manufacturer sponsors a chat agent and a user says, "I want to get information about a new-model car from this year." Upon receiving this command, the chat agent finds some pages describing new-model cars among the Web sites searched and presents them to the user. When the chat agent presents the search results the agent's sponsor, Company A, has its page highlighted. For instance, the link to Company A's page may be highlighted in a different color, listed first, or displayed in a different font or character size. The link to Company A's page may be also bordered by a frame or differentiated using an attached mark such as "recommended" or "hot site". Further, Company A's advertisement may be displayed on the same screen, making it more probable that the user will access the sponsor's site and improving the effectiveness of advertising.

**[0043]** In this system the sponsor, Company A, is charged for gaining priority. Each sponsor may be charged differently, depending on the number of times their site is given a high priority or the number of times their advertisement is displayed. Alternatively, the sponsor may only be charged if the user visits their site. Furthermore, the user may select a favorite sponsor. For instance,

Company A, an instant food producer, Company B, a car manufacturer, and Company C, a restaurant, sponsor the chat agent. One user may identify Company A as his/her favorite sponsor, while another user may choose Company B. If the user that identifies Company A as his/her favorite sponsor  
5 says, "I want to eat noodles", Company A's advertisement will be displayed according to the contents of the command, but no advertisements for Company B or C will be displayed. Thereby, only the information that is desired by the users will be presented. A user who identifies a favorite sponsor may receive an award from the system administrator or sponsor. For instance, the  
10 user's service fee may be reduced or he/she may be awarded cash or a gift.

**[0044]** The business model mentioned above can be termed the Win-Win-Win model, because it produces profits for each of the three parties; the user, the sponsor, and the system administrator. When the user browses Web pages, he/she can retrieve the information being sought by using an agent and  
15 simultaneously be relieved of the banner advertisements that always occupy the screen. Since an appropriate advertisement is displayed only when a related command is entered, it is not likely that unwanted advertisements will be displayed. Additionally, by identifying a favorite sponsor, the user can be rewarded and receive timely information from that sponsor.

20 **[0045]** Since sponsors can advertise directly to users who enter commands related to their products or services, they can expect their advertising to be very effective. Unwanted advertisements are not presented to users, so sponsors

can save advertising costs and realize high performance for the amount they are charged. By defining which commands trigger the presentation of an advertisement, both the target users and the display frequency can be adjusted. For instance, the system can be configured so that advertisements by sponsors in Tokyo are displayed to users who say, "Tell me a bar in Tokyo", while advertisements by sponsors in other areas are not displayed. The display frequency for advertisements may be set high by defining commands that users enter frequently. The sponsor may also target a specific user group by defining specialized terms for the advertisement.

10   **[0046]**   The user support system administrator may charge the sponsor an advertising fee. The system can display advertisements to users more effectively than banner advertisements and thereby reduce network loads. Therefore the system can serve many users and the administrator can retain a sufficient amount of the users' service fees and the sponsor's advertising fees.

15   **[0047]**   Although full details are given below, the abstract of the process in Fig. 1 is as follows. When the user activates the user terminal 12, the local agent implemented inside of the user terminal 12 appears on screen. The local agent waits for the first user command. This command is referred to as the process initiating command. The process initiating command is transmitted to  
20   the originating server 20 via the Internet 14. At that time, the user terminal 12 displays the originating server's 20 Web page on its Internet browser.

**[0048]** The originating server 20 stores a collection of user commands, comprised of commands that users are expected or anticipated to enter. An additional command collection is incorporated into the user command collection. The additional command collection is a collection of anticipated commands that trigger the sponsor prioritizing process. The process initiating command is compared with the additional command collection and the command's content is recognized. As a result, the expert agent designated to respond to the process initiating command is identified and the URL of its specialized server, as denoted by URLa and URLb in the figure, is sent to the user terminal's 12 browser. When the user terminal 12 receives the URL, a Web page on the specialized server is displayed on the screen and the expert agent appears. The specialized server contains a collection of action patterns for the expert agent, and responds to the process initiating command and subsequent user commands, which are referred to as normal commands. Although agent responses are considered to be the primary agent behavior in the following, the agent may also respond to the user through gestures or other actions, by changing the color or texture of its image, by performing a search, or through any other program processes.

**[0049]** When the process initiating command is included in the additional command collection of the sponsor specified by the user, the user's access destination is shifted to a page on a specialized server that performs the sponsor prioritizing process. The process of emphasizing the specified

sponsor's Web page or displaying the sponsor's advertisement is executed on this page. The system then waits until the user enters another command.

**[0050]** When the user enters a new normal command for the expert agent, the command is captured and sent to the originating server 20. The originating  
5 server 20 once again identifies which expert agent is designated to respond to the command, then transmits the URL of that agent's specialized server to the user terminal 12. The following sequence is repeated:

1. the originating server 20 identifies the user command;
2. the originating server 20 identifies the specialized server  
10 designated to respond to the identified command;
3. an expert agent on the specialized server responds to the user;
4. the sponsor prioritizing process is executed (only if the user command is contained in the additional command collection); and
5. the expert agent requests or prompts the user to enter a normal  
15 command.

**[0051]** Thus, the process always returns to the originating server 20 and then restarts from there. It is for this reason that the server is named the originating server.

**[0052]** Fig. 2 shows the internal structure of the originating server 20. In this  
20 figure, "H" indicates command data, "I" is the index search for the command, "F" is the file name containing the URL of the specialized server designated to



respond to the user's command, and "X" is the unidentified command, respectively. The structure shown in Fig. 2 may be implemented with a central processing unit (CPU), memory, and a program loaded into the memory. In the figure however, the blocks are not divided in terms of hardware and/or software components, but rather in terms of function. Those skilled in the art can therefore understand that various combinations of hardware and software components can achieve the functions of these blocks. The same consideration is applied to the whole specification.

**[0053]** The communication unit 30 communicates with the specialized server and the user terminal 12 via the Internet 14. The command obtaining unit 32 captures a user's command and sends it to the command search unit 34. The command search unit 34 initially checks the first character of the command with the index file 36 to search by index, then identifies the contents of the command by conducting a phrase search of the whole command. The phrase search is a process of finding any phrase that matches the command not only by word but also by phrase. If no corresponding phrase is found, the command is divided into morphemes and a search is conducted to find a closely related expression by key word or words.

**[0054]** The index file 36 is generated by arranging the anticipated commands stored in the user command collection 38 in the order of the Japanese syllabary. Since the first character of the command is checked with this index file 36, the search for the command can be conducted with great speed, even if

the user command collection 38 is very large. As described below, since the user command collection can easily be enhanced in this embodiment, the command collection 38 can be expanded significantly. In this respect, the speed gained by the initial index search is highly advantageous.

5    **[0055]**    When a command is identified using the index file 36, the descriptor of the file describing information such as the URL of the specialized server designated to respond to the command is identified in the index file 36. The file, built into the user command collection 38, is opened to obtain the proper URL. The user command collection 38 has one file devoted to each command. The  
10    file contains the URL of the page used to respond to the user command.

**[0056]**    When the user command is also included in the additional command collection 39, the file in the additional command collection 39 corresponding to that command contains the URL of the page that executes the prioritizing process that grants high priority to a specific sponsor. The sponsor setting  
15    status stored in the sponsor information file 50 is discussed below. If the user has registered a specific sponsor as his/her favorite, the URL specified in the additional command collection 39 is used and the sponsor prioritizing process is executed. If the user has not registered a sponsor, the user access destination moves to the URL specified in the user command collection 38 and the sponsor  
20    prioritizing process is not executed.

**[0057]** The URL obtained from the user command collection 38 or the additional command collection 39 is forwarded to the user terminal's 12 browser via the communication unit 30, and the user terminal 12 in turn accesses the specialized server. Strictly speaking, the URL does not point to a general Web page on the specialized server, but instead to a customized page designed to respond to the user's command. One page is allocated to each command, and in some cases, multiple pages are allocated to one command. The latter cases are described below.

**[0058]** A statement that corresponds exactly to the user's command may not always have been previously stored in the user command collection 38, so a perfect match may not be found. This is particularly true during the process of enhancing the user command collection 38. In this case, the command search unit 34 breaks the user command into morphemes by a known method and finds the most probable command from the user command collection 38 by searching again using a logical AND of the morpheme's nouns or by similar processes. Each command for which an additional search is conducted unsuccessfully is recorded as an unidentified command in an unidentified command file 40, and the originating server's 20 administrator is notified via the communication unit 42 by an electronic mail or similar method. The administrator then registers both the unidentified command and the URL of the page on the specialized server that is designated to respond to the command in the user command collection 38, registers the command's index in the index file 36, and finally designs the processes containing the responses for the

expert agent on that page. For this kind of maintenance, the unidentified command can be added directly to the user command collection 38 without any complicated processes. Therefore, it is very easy to enhance the user command collection 38.

5   **[0059]**   The additional index file 37 is generated by arranging the anticipated responses stored in the additional command collection 39 in the order of the Japanese syllabary. In Fig.2, the additional index file 37 and the index file 36 are depicted as separate files for ease of explanation, but the contents of the additional index file 37 is actually incorporated into the index file 36.

10   **[0060]**   The additional command collection 39 stores commands that trigger the sponsor prioritizing process. In Fig.2, the additional command collection 39 and the user command collection 38 are depicted separately for ease of explanation, but the contents of the additional command collection 39 is actually incorporated into the user command collection 38. The sponsor may set which  
15   commands are to be stored in the additional command collection 39. The sponsor can adjust the number of target users or a target user bracket by changing the contents of the additional command collection 39. A user database storing user attributes, which is not shown in the figure, may be provided and the advertisement may be displayed according to those user  
20   attributes.

**[0061]** An access recording unit 44 tracks the status of each user's access to a given specialized server in an access information file 46. This enables the expert agent to respond differently to identical user commands. For instance, when a user who is visiting the chat server for the first time 24 says "Hello", the chat server's 24 expert agent, also referred to as the chat agent, will say "Nice to meet you". However, if the user visits the chat server 24 again, the chat agent will say "Hello. How's it going?" Therefore, a certain sensitivity of response can be realized. The access recording unit 44 notifies the command search unit 34 of the user's access status. If more than one of the specialized server's pages are employed in the user command collection 38 in order to respond to a user command, as in this example, the command search unit 34 chooses the appropriate page by referencing the user's access status and then sends that URL to the user terminal's 12 browser.

**[0062]** The sponsor setting unit 48 sets the sponsor specified by each user in the sponsor information file 50. The sponsor setting unit 48 shows the user which sponsors are under contract with the specialized agent and asks which sponsor the user would like to select. The sponsor selected by the user is then recorded in the sponsor information file 50.

**[0063]** Fig. 3 is the internal structure of the index file 36 and Fig. 4 is the internal structure of the user command collection 38. The index file 36 contains a Japanese syllabary column 100, a user command column 102, and a file name column 104. The user commands are arranged in the order of the

Japanese syllabary. If the first character is "A", the command is inserted in the position corresponding to "A" in the Japanese syllabary column 100.

**[0064]** The user command collection 38 contains a file name column 104, a user command column 102, and a page column 120 listing the pages on the specialized server designated to respond to the user. For instance, the page on the specialized server used to respond to the command "Hi" is URLa43, and the pairing of the command "Hi" with URLa43 forms the file f044. The user commands are grouped according to each specialized server. For instance, the user commands 110 that are linked to the chat server 24 are combined into one group, while the user commands 120 linked to the gourmet server 26 are combined into another group. The index file 36 and the user command collection 38 are linked together by file names. For instance, the file name f045 is recorded corresponding to the command "Hello" in the index file 36 and points to the file f045 in the user command collection 38.

**[0065]** As shown in Fig. 4, two pages, URLa1 and URLa2, correspond to "Hello". URLa1 is sent to a user visiting the chat server 24 for the first time and URLa2 is sent to that user upon each subsequent visit.

**[0066]** Fig. 5 illustrates the contents of the access information file 46. In this figure, "user1" has previously visited the specialized servers named "chat", "gourmet", and "auction", while "user2" has already visited the specialized servers named "travel" and "PC". Therefore, as stated above, when "user2"

visits the chat server 24, the chat agent will give the greeting prepared for new visitors. When "user1" visits the chat server 24, the chat agent will give the greeting prepared for returning visitors.

**[0067]** Fig. 6 is the internal structure of the sponsor information file 50. In this figure, "user1" has set "Company A" and "Company C" as sponsors of the chat agent and "Chinese Restaurant A" and "Restaurant Z" as sponsors of the gourmet agent. "User2" has only set "Company B" as the chat agent sponsor and has not selected a gourmet agent sponsor. Therefore, while "user1" is talking with the chat agent, advertisements for companies A and C will be displayed, but not advertisements for company B.

**[0068]** Fig. 7 is the internal structure of the additional index file 37 and Fig. 8 is the internal structure of the additional command collection 39. As described above, the additional index file 37 and the additional command collection 39 are incorporated into the index file 36 and the user command collection 38 respectively, but they are presented as separate files here for ease of explanation. The additional index file 37 contains a Japanese syllabary column 200, an agent response column 202, and a file name column 204. The user commands are arranged in the order of the Japanese syllabary, as they are in the index file 36.

**[0069]** The additional command collection 39 contains a file name column 204, a user command column 202, and a page column 220 identifying

the correct page on the specialized server designated to respond to the command. For instance, the page on the specialized server designated to respond to the agent response "steamed bun" is URLa203, and pairing the response "steamed bun" with URLa203 forms the file f702. The user

5 commands for each specialized server are grouped into sets; command collection 210 for the Japanese cake shop D, command collection 212 for the Chinese restaurant A, and command collection 214 for the Italian restaurant E. The additional index file 37 and the additional command collection 39 are linked together using file names. For instance, the file name f805 is recorded

10 corresponding to the response "dumpling" in the additional index file 37 and points to file f805 in the additional command collection 39.

**[0070]** Fig. 9, the internal structure of the gourmet server 26, provides an example of a specialized server. The communication unit 60 communicates with the user terminal 12 and the originating server 20 via the Internet 14. The

15 URL identified in the originating server's 20 command search unit 34, URLa1 or URLa2 which correspond to the command "Hello" as shown in Fig. 4 for instance, is forwarded to the agent action collection 62 via the communication unit 60. The agent action collection 62 includes agent data 72 that describes the expert agent's images, action patterns, and responses, as well as sponsor

20 data 90 that stores sponsor's advertisement data. One page corresponding to the URL identified by the command search unit 34 is also provided. For example, page 64 is provided for URLa1, page 66 for URLa2, and page 68 for URLan. These Web pages contain the gourmet agent's responses, display its



image and behavior, and perform agent services like information retrieval.

Thus, fully flexible responses can be given by providing a customized Web page for each command.

[0071] Each page is configured in almost the same manner, so only page 64  
5 of URLa1 is described in detail in this figure. Page 64 has an agent output  
unit 70, a user command obtaining unit 74, and a specific process execution  
unit 76. These units can be configured to retain the main functions on the  
server side like a Common Gateway Interface (CGI) implementation, to transfer  
the main functions to the client side using Java™ applets or ActiveX™  
10 components, or to use an Application Program Interface (API) strategy that  
divides the main functions between the server and the client. The agent output  
unit 70 responds to a user command through the gourmet agent on the basis of  
the agent data 72. The specific process execution unit 76 performs any  
processes other than responding to commands. For instance, it will retrieve  
15 information and execute various types of programs. If the command that  
brought the user to a specific page was "I want to know restaurants in Shijuku",  
the gourmet agent will use the Internet 14 to search for information related to  
applicable restaurants and present the results to the user. Next, the user  
command obtaining unit 74 obtains a normal command from the user and  
20 notifies the originating server 20. The originating server 20 then identifies the  
specialized server designated to respond to that command.

**[0072]** Fig. 10 is the internal structure of the page that executes the sponsor prioritizing process, which is stored in the agent action collection 62. The specific process executing unit 76 includes an information search unit 78 that uses the Internet 14 to search for information requested by the user and a

5 sponsor processing unit 80 that executes the sponsor prioritizing process for the search results. The sponsor processing unit 80 includes a display order setting unit 82 that displays a specific sponsor's information at the top of the search results, a display attribute setting unit 84 that emphasizes the sponsor's displayed information, an advertisement display unit 88 that displays the

10 sponsor's advertisements, and an update status reporting unit 86 that notifies the user when the sponsor's site has been updated. The sponsor processing unit 80 retrieves stored information from the sponsor data 90 and determines how the sponsor's information should be displayed. The search results processed by the sponsor processing unit 80 are displayed to the user through

15 the information providing unit 71 in the agent output unit 70.

**[0073]** Fig. 11 shows the internal structure of the user terminal 12. The communication unit 130 communicates with the originating server 20, the chat server 24, the gourmet server 26, and other specialized servers via the Internet 14. User interface 138 is a general term for the whole structure used to

20 encourage the user to make a decision and to enable the user to input that decision. The user interface 138 includes a keyboard, a mouse, a display, and other types of data interfaces. The local agent output unit 132 reads local agent data 134 and forwards it to the user via the user interface 138. The process

initiating command and normal user commands are forwarded to the user command input unit 136 and then sent to the originating server 20 via the communication unit 130 and the Internet 14. The processes involved in the above-mentioned configuration of the embodiment are now described using  
5 examples.

**[0074]** Fig. 12 shows the screen 150 displayed when a user has activated the user terminal 12. The local agent 152 appears and says, "Welcome! Let's chat." The user inputs "Hello" in the input field 154 and presses the send button. The page may be configured to have the input field 154 appear when  
10 the user clicks the local agent 152. In this case, as long as the user does not click, the local agent 152 may continue chatting or trying to encourage the user to talk by asking a question. Regardless of the implementation, the statement "Hello" is sent to the originating server 20 as a process initiating command, the chat server 24 is identified as the specialized server designated to respond on  
15 the basis of the statement's content, and the user terminal 12 is given access to the appropriate page.

**[0075]** Fig. 13 shows the screen 150 displayed when the user enters a command. Here the chat agent 156 appears using the same image as the local agent 152 and the conversation appears to continue seamlessly. The chat  
20 agent 156 says, "Hello. I am a chat agent. Call me Peako." When the user enters "Let me know a restaurant serving good Peking ravioli." and presses send, the command is obtained by the originating server 20 and a page on the

gourmet server 26 is identified. The URL of the identified page is then sent to the user terminal 12 and the user terminal 12 is given access to that page.

**[0076]** Fig. 14 shows the screen 150 displayed when the user asks for information. The gourmet agent 160 appears and says, "All right! Trust me. I am a Gourmet Agent." and the information search unit 78 searches Web pages using "Peking ravioli" and "dumpling" as key words. In order to prevent the user from getting bored during the search, the agent says, "Wait for a moment. I will come back soon." to indicate that the search is being executed. When the search has been completed, the browser is given access to a page displaying the search results.

**[0077]** Fig. 15 shows the screen 150 displaying the search results. The information providing unit 71 displays the titles 170 of the pages obtained by the information search unit 78. Each of the titles 170 has a link to the corresponding page. In this example, because the user has registered Chinese restaurant A as a sponsor of the gourmet agent, the link to restaurant A is displayed at the top of the recommendation list. This is accomplished by the process executed in the display order setting unit 82. Additionally, the font has been changed to bold through a process in the display attribute setting unit 84. Finally, the advertisement display unit 88 presents the sponsor's advertisement through the gourmet agent's 160 response "Restaurant A is famous for its citrus-flavored Chiaotzu".

**[0078]** Fig. 16 illustrates the screen displayed when the gourmet agent 160 notifies the user that the sponsor's site has been updated. In this example, the gourmet agent 160 notifies the user, who has registered Chinese restaurant A as a sponsor, of the change in status. The update status may be checked  
5 whenever the user enters a related command, but the user may only be notified if the site has been updated. The update status may also be monitored periodically. When the system finds, through monitoring, that the site has been updated, the user may be notified immediately or after the user enters a related command. The date and time of the user's last visit to the sponsor's site may  
10 be recorded, and the user may be notified when the site is updated thereafter. The last date and time may be stored in a database on the originating server 20 or recorded on the user terminal 12 as a cookie.

**[0079]** Although the present invention has been described by way of exemplary embodiments, it should be understood that those skilled in the art  
15 might make numerous changes and substitutions without departing from its spirit and scope as it is defined by the appended claims. Some possible alterations are described below.

**[0080]** Although the command identification block hosted on the originating server 20 is shared in this embodiment, each specialized server may contain a  
20 command identification block and a response block. In that configuration, both the user command collection and the agent action collection may be managed independently for each specialized field, making management and maintenance

of the agent easier. However, a central server may be provided to process all commands in any configuration.

**[0081]** Although the user commands are entered in text in this embodiment, they may also be entered using speech recognition. The agent may also  
5 respond to the user verbally/orally.

**[0082]** Although an unidentified command is considered to be a command that is not identifiable in the user command collection 38, a command that is identifiable in the user command collection 38 but has an expert agent response that is not complete or fails may also be called an unidentified command. For  
10 instance, when the specific process execution unit 76 searches for the user command "Recommend a recipe" and the search returns too many results to satisfy the user, the command may be reported to the system administrator as an unidentified command so that the expert agent's response can be improved.

**[0083]** In the present embodiment, the appropriate expert agent response is  
15 selected according to the record of the user's access to the specialized server. Moreover, an appropriate agent response may be selected based on the user's attributes. For instance, if the user is female, a relatively gentle expression may be chosen, while if the user is elderly, a polite expression may be used.

**[0084]** Although the local agent 152 and the chat agent 156 have the same  
20 image in the embodiment, it is not required. The local agent 152 may be

implemented on the originating server 20 instead of the user terminal 12 as a process-initiating agent, for instance.

**[0085]** Although the access information file 46 and the sponsor information file 50 are stored on the originating server 20 in the embodiment described, 5 these files may alternatively be stored on the user terminal 12 as temporary data, for instance as cookies.

**[0086]** Although the system is configured to allow each user to set his/her favorite sponsors individually, it may provide the sponsor information equally to all users who visit the specialized server.

10 **[0087]** Although functions such as the command identification block and the response block are implemented on the server side, some or all of these functions may be implemented or installed on the user terminal 12. For instance, the identification block may be downloaded to the user terminal 12 beforehand to allow command analysis to be performed at the user terminal, 15 while the user terminal may still access the server containing the response block. Some of the specialized agent's functions, which are in particularly frequent use, may be downloaded to the user terminal 12. Since part or all of the command analysis and agent response processes can be performed on the user terminal 12, it is possible to generate quick responses. Thus any 20 configuration is possible with respect to the division of functions between the server and the client.